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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,750	05/22/2002	Douglas J. Woodnorth	08935-035004	2881

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EXAMINER	
CHANEY, CAROL DIANE	
ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 03/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,750	WOODNORTH ET AL.	
	Examiner	Art Unit	
	Carol Chaney	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-23, 25, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Kordesch et al., US Patent 3,945,847 with evidence provided by Buchanan et al., US Patent 5,137,542.

Kordesch et al. disclose methods of forming alkaline batteries. A cathode formulation disclosed by Kordesch et al. includes

1000 grams electrolytic manganese dioxide
100 grams powdered graphite
20 grams modacrylic fibers, 1/8-inch long (optional)
10 grams Ag.sub.2 O (optional)

The powdered graphite is a commercial product marketed under the trade name "Dixon Air-Spun Graphite, Type 200-09", by the Joseph Dixon Crucible Company, Jersey City, N.J. (See column 10, lines 50-65.) As evidenced by Buchanan, "Dixon Air-Spun Graphite, Type 200-09" has an average particle size of 5 microns. (See Buchanan, column 13, lines 17-21.) Thus, the cathode formulation disclosed by Kordesch et al. has at most 10 weight percent graphite, with an average particle size between 5 microns and 9 microns. The graphite is assumed to be a natural graphite, as there is no evidence to the contrary. In a preferred embodiment, the anode includes

zinc powder pressed onto a tin-plated screen. (See column 16, lines 42-45.) The anode thus includes tin, which will inherently be a gassing inhibitor.

With regards to claim 21, Kordesch et al. disclose a separator layer of modacrylic fiber and a layer of fibrous cellulose. (See column 16, lines 47-49.)

With regards to claim 22, Kordesch et al. disclose their inventive electrodes will absorb from about 20 to 40 weight percent of electrolyte. (column 9, line 60-column 10, line 3.)

With regards to claim 23, Kordesch discloses a preferred embodiment containing 7 anodes with the dimensions 2 x 2.25 x 0.02 inches, and containing a total of 20 grams of Zn powder. The zinc thus has a density of about 1.94 g/cm^3, which is considered to be "about 2 grams of zinc particles per cubic centimeter of anode volume." (Column 16, lines 37-45.)

With regards to claim 25, Kordesch discloses 20 grams of zinc powder used in a batter with 20 grams of electrolyte, so the zinc particle to electrolyte solution weight ratio is 1.0. The "starch gelled KOH" mentioned by Kordesch appears to serve as a gelling agent for the anode rather than as the battery electrolyte. electrolyte which is part of the starch gel is not considered in the calculations of claim 25.

With regards to claim 26, the cathode formulation of the embodiment includes polysulfone binder in addition to manganese dioxide and graphite. (column 16, lines 40-43.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kordesch et al. in view of Newman et al., US Patent 5,283,139.

As discussed above, Kordesch et al. disclose applicants' invention essentially as claimed, with the exception that Kordesch et al. disclose a manganese dioxide to electrolyte solution ratio of 21:20 (1.05) rather than 2.4 to 2.9. However, Newman et al. disclose the ratio of MnO_2 capacity to zinc capacity in an alkaline battery should be between 0.95:1 and 1.1:1 in order to improve discharge efficiency of the battery. (See Newman, column 3, lines 47-50.) The capacity of MnO_2 is 0.37 ampere hours per gram and the capacity of zinc is 0.82 ampere-hours per gram (See Newman, column 6, lines 23-27) It would have been obvious to one of ordinary skill in the art to use about 44 g of MnO_2 in combination with the 20 grams of zinc used in the battery disclosed by Kordesch because this will give a 1:1 ratio of MnO_2 capacity to zinc capacity which Newman et al. teach will improve discharge efficiency of a battery. This would result in a weight ratio of MnO_2:electrolyte of 2.2 which is about 2.4. Thus, applicants' invention would have been obvious to one of ordinary skill in the art based uponthe teachings of Kordesch and Newman.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Carol Chaney
Primary Examiner
Art Unit 1745

cc